

DWELLING UNIT ENVIRONMENT AND THE WELL-BEING OF THE RURAL  
ELDERLY

by

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## I. INTRODUCTION

### Introduction and Rationale

Over the last several years, the study of gerontology has grown as evidenced by an increase in the financial resources expended by the Federal Government on related programs and funded research, and the increasing expansion of specific disciplines in the field of aging. But still the emergence of the field of environment and aging has been slow. Even more sparse are studies of the impact of the physical environment on the well-being of older people. With Pihlblad and Rosencranz (1969), and Windley and Scheidt (1980, 1982), taking the lead, there has been an increase in systematic research on the impact of environmental factors in small towns on the well-being of older rural residents.

This lack of research is of particular concern because, according to the U.S. Census Bureau the older population, 65 years and older, accounted for 3.1 million or 4% of the total population in 1900. By 1980 the number had risen to 25.5 million, or about 10% of the total population. Demographic projections indicate that although the proportion of the older population will remain about 10% - 11%, the number of elderly will climb to approximately 30.0 million by the turn of the century (Grotman, 1976). Researchers have shown that approximately one-sixth of the older population lives in small towns of 2,500 or less in

population, (Lawton, 1977), and that the highest concentration of elderly resides in small rural communities (Cutler and Harootyan, 1975). Given these substantial numbers, it is necessary for planners, designers and environmental managers to better understand the residential needs of this special rural population.

The elderly, whose primary locus of life space is within the residential setting (Pastalan, Carson, 1970), are subject to the influences of environmental factors more than perhaps any other population group. Most older persons are likely to have experienced some kind of reduction in competence, such as limitations in health, cognitive skills, ego strength, social status, and social role performance. These factors tend to heighten an older person's sensitivity to environmental constraints and influences in the residential environment.

This thesis will focus on the impact of attributes of the residential environment on four different groups of older people showing different profiles of well-being. These environmental attributes include - sociality, comfort, accessibility, quality, privacy, and density. The four well-being groups are - the partially engaged, the fully engaged, the disengaged, and the frail. Both, the attributes and the well-being groups are elaborated upon later in this study.

This thesis will study the relationship between the well-being of 115 elderly persons (over 65 years of age) living in small rural communities (under 2,500 in population) in the state of Kansas, and the attributes of the dwelling unit listed above. This thesis is a component of a larger project by Windley and Scheidt (1982) which examined the effects of physical and psychosocial attributes of small towns on the well-being of town residents. Any departure in rationale from the larger project will be elaborated upon in this thesis.

Presented below is a review of relevant literature in elderly well-being and dwelling unit environments, followed by a more complete description of the larger project by Windley and Scheidt. A number of hypotheses of anticipated relations between the characteristics of dwelling units and the well-being of the elderly residents are stated later in this study. The major hypothesis of this study is that the objective characteristics of their dwelling unit will classify the elderly residents into one of four well-being groups.

## Review of Literature

### well-being: A multidimensional construct

According to Windley and Scheidt (1980), Larson (1978) provides one of the most thorough reviews of research on well-being. He suggested that well-being is a multidimensional construct developed from concerns for individual mental and physical health. Defined a few years ago in purely economic terms (individual income above poverty level), well-being has been transformed into a more complex psychological construct, often referred to as the "quality of life". The first major study of well-being in non-economic terms was that of Gurin, Veroff, and Feld (1960). Gurin, et.al., viewed well-being as the fears and anxieties of people, their strengths and resources, the problems they faced, and the coping methods used to overcome their problems. A mental health orientation in assessing well-being was used by Gurin and colleagues in questions relating to the need for counseling, a checklist of "psychiatric symptoms", and how happy the respondent felt.

The second major approach to the study of well-being was that of Bradburn and Caplovitz (1965). In this definition, well-being was expressed as the level of individual happiness. From this and later work, Bradburn suggested that happiness is an emotional balance between the number of positive and negative effects with which an individual identifies, (Bradburn, 1969).



A more cognitive approach to the conceptualization of well-being was developed by Cantril (1965). Cantril asked each subject to think about "the worst life" and "the best life", then place himself somewhere on the scale between the two extremes. Cantril's method provided a measure of well-being based on aspirations, levels of achievement, and satisfaction with one's life experiences.

The work of Campbell, Converse and Rodgers (1976) has provided one of the most comprehensive studies of well-being to date, in which they proposed a multidimensional approach to "monitor the quality of American life". Campbell, et. al., defined well-being in terms other than a purely mental health construct. The components of well-being included: jobs, marriage, health, housing and friendship, because these dimensions reflect many areas of life experience. Through their study Campbell, et. al., provided more detailed information about the quality of life than previous studies have yielded.

The studies reviewed above demonstrate the change that the conceptualization and understanding of the term "well-being" has gone through, from mere subjective measurements to the present day scientific objective measurements. The latter mode was utilized in this study.

## The Effects of Residential Environments on Older People

A broad picture of the presumed adverse effects of poor housing and slum neighborhood settings on physical and mental health of the residents was presented in "Slums and Social Insecurity" by Schorr (1963), according to which self-perception was affected adversely, resulting in pessimism and passivity.

A study by Wilner (Wilner et. al., 1962) revealed minimal benefits of improved housing on mental health (mood, nervousness, general morale, self-esteem, general anxiety), on aspirations and on various self-promotive activities.

Based on the above two studies and other literature on residential environments, Kasl and Rosenfield (1976) suggest that interventions in the psychosocial environment may be much more difficult to implement than those in the physical-residential environment, and that physical and psychosocial parameters may interact in two major ways: (1) the effect of a particular physical residential parameter could be distinct for different subgroups of residents and (2) the effect of a particular physical residential parameter could be dependent on how the resident responds to it and the way it is used.

Lawton (1980) in his book, Environment and Aging, refers to our lack of knowledge about the older population's homes.

Even the Bureau of Census has had difficulty in including some of the more important indicators of housing quality in the 1980 Census. The Annual Housing Survey which began in 1973 did help some in the gathering of this vital information. Lawton (1975) in his studies also found that 70% of all dwelling units headed by the elderly are owner occupied. An owned home serves a very important function in the interaction of older people and their environment. Self-owned homes, besides being the cheapest housing, is familiar to and loved by the elderly occupant, and also has symbolic value to them. This may be a prime reason in occupants' underreporting housing deficiencies in a study done by the U.S. Department of Housing and Urban Development. Lawton (1980), suggested another important reason for the elderly occupants underreporting housing deficiencies and that being the difficulty in reducing some aspects of housing to objective indicators. Lawton agrees that the occupants would have difficulty in recognizing some of these objective features as well, especially the aesthetic ones. Some of these objective features become deficiencies only when the users' competence is limited (Lawton; Nahemow; 1975, 1977). Hence, in order to obtain a more complete knowledge about the quality of housing, Lawton suggests that we know something about the functional competence of the occupant as well as the objective features of the dwelling unit. This thesis deals with the objective

dwelling unit environment and its effect on four well-being groups. The four well-being groups were developed in the larger project by Windley and Scheidt, and are described below.

### Brief Overview of the Larger Project

The larger project by Windley and Scheidt will be reviewed in order to provide a context for this thesis. No findings emerging from the larger project will be discussed in this thesis.

### Sampling of Towns and Subjects

As mentioned earlier, data for this thesis was obtained as part of a larger study by Windley and Scheidt (1980). Interview data were gathered from approximately 990 older residents across 18 small Kansas towns (2500 and less in population). These towns were systematically selected to represent 3 town-size categories (small = 100 - 500; medium = 501 - 1500; large = 1501 - 2500) across 3 categories of quantitatively defined county rurality (low - medium - high), forming a 3X3 townsiz-rurality matrix. Two towns were then selected from each of the nine cells. A sample of 990 residents in these towns was randomly selected and interviewed over a period of nine months.

### The Development of the Four Well-being Groups

Windley and Scheidt (1980) reported that several measures of subjective well-being were adapted from the work of Lawton, Nahemow and Teaff (1975) to assess the social and psychological well-being of these older residents. Using scores obtained by older residents on these measures, a second-order factor analysis produced three distinct factors which combined to explain over 40% of the variation among scores on the measures. The three factors were: Mental and Physical Health, Contact with Others, and Activity Participation. Every older individual was then classified as either a "high" or "low" scorer on each of the three factors. These groups are defined by Scheidt (1981) and illustrated in Figure 1:

### The "Partially Engaged" (High-Low-High, 46% of the total sample).

These older residents (N = 459) displayed higher mental and better physical health, had fewer home visits with friends and relatives, but engaged in several formal and informal town activities. They were the most well-educated of the four groups, their average age being 72.5 years. Their generally higher mental health was reflected in their scores on the measures of psychological well-being. Most (92%) exhibited high morale and were functionally healthy, with 92% able to walk 1/2 mile without trouble and 83% able to do

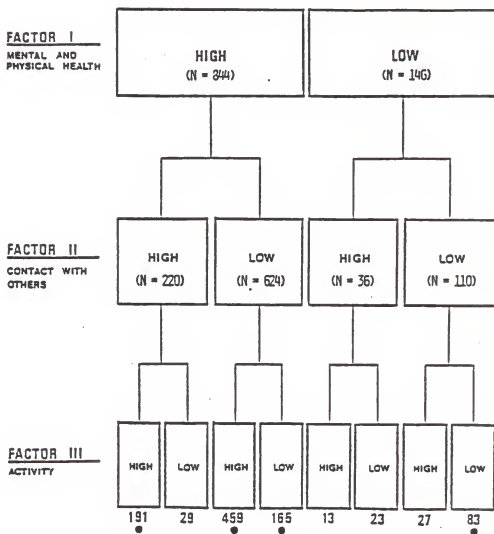


Figure 1: Three second-order Well-being factors and groups resulting from combinations of high/low scorers across factors. Black dots designate the four most populated Taxonomic profiles.

heavy housework without help. On an average mutual visitation for people in this group occurred about twice a month with friends and about once a month with relatives. Despite fewer home visits with relatives and friends, these individuals were involved in a large number of community activities that took them out of their neighborhoods several times a week. Overall, these were highly mobile individuals who were environmentally assertive and involved.

The "Fully Engaged" (High-High-high, 19% of the total sample).

This group (N = 191) appears to be the most fully engaged. Like the partially engaged, these individuals possessed better physical and higher mental health and were among the most active and mobile in the community. Unlike those above, however, they visited and were visited by friends and relatives more frequently. This was also a more well-educated group and most of these older individuals had high morale. The average age of this group was 73 years. Their overall level of functional health was similar to the "partially engaged"; 87% were able to walk 1/2 mile and 82% were able to do heavy housework on their own. Mutual home visitations with friends and relatives occurred over once a week - the highest of any of the four groups. As a group, these older residents participated in the greatest number of community activities, and were also highly mobile, getting out of the house and neighborhood almost daily.

The "Disengaged" (High-low-low, 17% of the total sample).

These older residents (N = 165) come closest to being termed "disengaged" as the term is traditionally used. They displayed relatively robust physical and mental health, but showed a low degree of social activity and community involvement. These older residents tended to be older with an average of 77.8 years, and displayed weaker mental and physical health compared to the above groups. Most of them were high in morale, with 56% saying they could still walk 1/2 mile and only 40% able to do heavy housework. Mutual visitation with friends occurred once a month, and visited their relatives about 3-4 times a year, with their relatives visiting them about once a month. Though they tended to get out of their homes almost daily, they left their neighborhoods less than once a week on an average, and engaged in fewer community functions than those of other groups.

The "Frail" (low-low-low, 8% of the total sample).

These older residents (N = 83) displayed lower mental and physical health, social contact, and activity patterns. Of the four groups, these individuals were the most frail and vulnerable. The largest number of nonworking or unemployed elderly occurred in this group, with their average age being 75.3 years. Most of them displayed low morale, and a majority reported being unable to walk 1/2 mile and unable



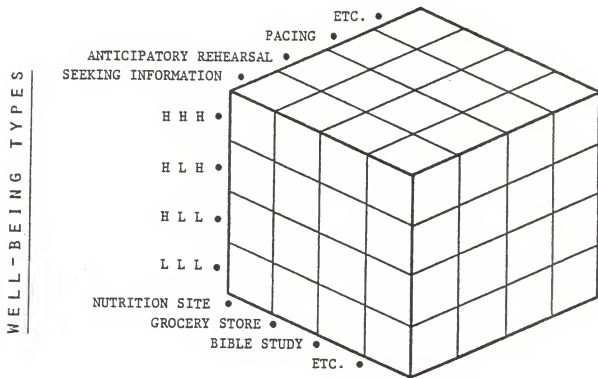
to do heavy housework without aid. They engaged in mutual home visits with friends about once a month and were visited by relatives about 4 to 10 times a year, and visited these relatives less than 3 times a year. Like the "disengaged" group they engaged in fewer formal and informal town activities, getting out of the house daily but only about once a week out of the neighborhood.

Windley and Scheidt (Windley, 1982; Scheidt, 1982) examined some aspects of the four Well-being groups described above in a study. The study was to assess the well-being of elderly persons in small-towns which also provided the context in which this thesis was developed. Prior to the work of Windley and Scheidt, little was known about the well-being of elderly persons living in rural communities.

This was a short term longitudinal study by Windley and Scheidt, directed at examining the mental health and adaptive functioning of the four Well-being groups of elderly people described above. The psychological and behavioral coping responses of the subjects served as the dependent variables in the study and were examined within and across the four Well-being types and within and across behavior settings, as shown in Figure 2.

The assumptions in the Windley and Scheidt study that are relevant to and essential to the hypotheses in this thesis were:

COPING RESPONSES  
(PSYCHOLOGICAL AND BEHAVIORAL)



BEHAVIOR SETTINGS  
(ECOLOGICAL/ARCHITECTURAL AND  
PSYCHOSOCIAL PRESS ATTRIBUTES)

Figure 2: Schematic Representation of  
Variable Domains

- a. The high-high-high or "The Fully Engaged" group, due to their higher levels of activity and social contact would encounter a wide variety of both ecological/architectural and psychosocial press. Their higher level of subjective well-being would also make them deal with objective press relatively easily, and they would also be able to generate a large number of coping responses.
- b. The high-low-high or "The Partially Engaged" group of elderly residents would experience lower psychosocial press due to their lower degree of social contact, but would perceive a higher degree of ecological/architectural press, and would display a substantial amount of adaptive responses.
- c. The high-low-low or "The Disengaged" group of older people would encounter lesser press overall due to their lower social interaction and activity level, but would also display a lower range of coping responses compared to the above two groups.
- d. The low-low-low or "The Frail" group of elderly rural residents being low on all three counts of mental and physical health, contact with others, and activity would encounter the lowest press, and will also display the lowest range of coping strategies.

The larger study to date has shown that the psychosocial variables had a larger impact than the other predictor domains on five specific indices of well-being:

neighborhood features, presence of a confidante, total affect balance scores, lonely dissatisfaction (morale), and activity participation. (Windley, 1982; Scheidt, 1982)

As described earlier and by the above assumptions, the four well-being groups contained a large amount of potential overlap. There is also a great difference between the "fully engaged" and the "frail". Based on the above, the hypothesis of this thesis is that the four well-being groups will differ on the objective characteristics of their dwelling unit. Hence, the residential setting for each of these four groups will be described and analyzed in this thesis.

The studies described above covered the evolution of research on the well-being and mental health of the elderly. The research here illustrated a movement away from the use of unidimensional constructs and attempts to validate broadly conceived formulae of successful aging to the use of multiple constructs and increased emphases upon individual differences and patterns of well-being. The environmental attributes is the other major component of this thesis and is elaborated upon below.

### The Environmental Attributes

Windley and Scheidt (1981) developed environmental attributes which comprised a combination of both social and

physical characteristics and are adapted from the work of other researchers, viz. Erill (1970), Spivak (1973), Steele (1973) and Weisman (1978). The rationale for this combination was threefold. First, behavior cannot be studied separately from environment because the environment surrounds and enfolds the individual, Ittelson (1970). Second, environmental attributes must be sensitive to change over time and to minor fluctuations in conditions. Third, environmental attributes must be applicable at all scales of environment - the dwelling unit scale, as well as the neighborhood and city scale. The first six of the following ten attributes, developed in the larger project by Windley and Scheidt (1980) were used for this study and will be discussed in detail later.

Sociality. This dimension concerns the extent to which an environment encourages or discourages social contact among people. Comfort includes the presence or absence of adequate luminous, acoustic, thermal and anthropometric properties of a setting. Environmental Accessibility is the ease with which an individual can traverse from point A to B in a given setting, and the degree to which more stationary objects or products can be manipulated. Environmental Quality is the aesthetic appeal of a setting from a users point of view. Privacy concerns the extent to which the features of a setting allow an individual to control unwanted visual and acoustical stimuli from others.

Density concerns the degree to which a space is perceived to be crowded both in absolute numbers of people, as well as the proportion of elderly in a given setting. Adaptability is the ease with which a setting can be rearranged to accommodate new or different patterns of behavior. Environmental Control measures the extent to which an environment facilitates personalization and conveys individual ownership of space. Sensory Stimulation concerns the quality and intensity of environmental stimuli perceived through various sensory modalities. Environmental Legibility is the degree to which a setting possesses spatial organization, and incorporates the components of identity and structure in Lynch's (1960) terms, the extent to which a setting is perceptually understandable and facilitates orientation, predictability and direction finding.

The residential setting will be examined objectively along the following six environmental attributes defined by Windley and Scheidt (1980):

Sociality. The sociality of a setting is determined by the degree to which it possesses "sociopetal" characteristics in Osmond's (1959) terms, that is, the extent to which a setting facilitates people engaging in mutual social exchange. Such attributes as the number of seats in the room where socializing takes place and the

sociopetality of the seating arrangement in that room were measured in this dimension. The average distances between people was assessed. The degree to which the furniture in the setting was sufficient in both quantity and maneuverability was also determined.

Comfort. The degree to which a behaviour setting can pass human-engineering tests for "comfort" in terms of lighting levels at strategic places in behavior settings where activities occur, such as at a desk or a table or at the nexus of hallways; temperature levels at various locations within the setting during both winter and summer months; the acoustical properties in decibel terms while the setting is in operation; and the anthropometric fit for furniture and other environmental props used in the setting by the elderly residents. A setting with a high demand potential will exceed or fall below the lighting, temperature, acoustical and anthropometric comfort zones for the average older person.

Accessibility. This is the degree to which a setting is free from architectural barriers and can be easily approached and entered, as well as, the degree to which stationary objects and products (such as furniture, light switches) can be manipulated. The number of physical barriers such as steps and ramps encountered while trying to enter the dwelling unit were enumerated. The difficulty

encountered in using such objects as door knobs, hand rails, or manipulating furniture were noted. The intent here was to develop for each setting a numerical and cumulative measure of the degree to which the setting is inaccessible.

Quality. This attribute refers to the degree a dwelling unit meets U.S. Census Bureau's checklist of housing quality in terms of maintenance and repair, and also the degree to which it has aesthetic appeal. Things like whether the dwelling unit had complete plumbing in the bathroom, if the electrical wiring was exposed, or if there was a leak in the roof and if there were holes, bumps or cracks in the floor were noted.

Privacy. This attribute assesses the degree of susceptibility of a setting to human intrusion and surveillance. Such attributes as whether the dwelling unit is above the first floor of any building or immediately adjoined by any other structure or dwelling unit on any side, are measured in this dimension. The area of all windows and doors in the setting was also calculated as a function of total wall area, to assess the "fish bowl" effect.

Density. This attribute assessed the absolute number of people per square foot in the dwelling unit.



These environmental dimensions are reviewed in this study in terms of their demand potential, or environmental press as discussed by Lawton (1975;1977). Environmental press is defined as the specific environmental attributes of community behaviour settings that enhance or inhibit the performance of daily activities of older persons (Windley,1980; Scheidt,1980). Environmental press interacts with personal competence to produce an adaptive outcome of interest. The elaboration of the concept of environmental press can be found in (Lawton, 1975; 1977), formed the conceptual framework for the assessment of environmental attributes in the larger study by Windley and Scheidt, described earlier in this study.

It is necessary now to show how this thesis departs from the major thrust of the larger project. First, the primary focus of this thesis is the residential environment. Therefore, the small-town context of the larger study will not be emphasized. Second, this thesis deals mainly with the objective residential environment; that is, the environment "as perceived" will not be discussed in this study. Third, no attempt is made to identify the role of the psychosocial environment in resident well-being. This thesis used the six dimensions of the residential setting to predict membership in the four well-being groups. If differences are found, a strong argument can be made in favor of manipulating design features of the residential setting to enhance the well-being of older rural residents.

## ASSUMPTIONS OF THE STUDY

The assumptions in this study are as follows:

1. The objective characteristics of the dwelling units will predict the classification of the elderly residents into one of the four well-being groups, described above. As stated earlier, the environmental attributes used in this study comprised a combination of both social and physical characteristics, and the press exerted by them on the individual experiencing the environment results in adaptive or non-adaptive behavior. It is expected that there will be a significant difference between the scores on the characteristics of the dwelling units for each of the four groups based on their classification.
2. The objective characteristics of the dwelling units will also predict the Dwelling Status (living alone vs. living with somebody), for the elderly residents. It is anticipated that living with somebody would result in the subjects scoring higher on some of the dwelling unit characteristics, especially sociality and accessibility. The seating arrangement is expected to reflect more sociopetality, and the scores on density would be affected too, which may show some significant differences between these two groups.

## II. METHODS AND RESULTS

Before the methodology for this study is explained, it is necessary to lay the foundation and briefly review the methodology adopted for the larger project by Windley and Scheidt.

### Respondent Sampling

The sampling of towns and subjects and the development of the four well-being groups has already been discussed earlier in this study, as part of the overview of the larger project. Windley and Scheidt's study was assisted by a town panel in each community (Windley 1980; Scheidt 1980). The town panel, comprised of two to four local leaders, helped develop rapport between the interviewers and the community. They offered advice on the research instruments and with the payment of interviewing fees to respondents. They also helped develop interviewing procedures and techniques that would be sensitive to the elderly residents in the towns.

These town panels, in fact, turned out to be an invaluable resource, as they also provided the research staff with a list of names of the elderly persons in the town. The estimated time for administering the instrument was one and one-half hour, and the town panel screened the respective lists of possible interviewees, in order to identify residents they thought would not be able to

complete that long of an interview, because of health or other problems.

### Data Collection

A total of 100 elderly persons - 25 each from the four well-being groups - were interviewed for this study. A standard, structured interview schedule was used for data collection. The interviewers were graduate students in architecture, family and child development, sociology and psychology. The interviewers were familiarized, through training sessions, with all the general criteria and special procedures needed in interviewing the elderly. Each interview was conducted in the respondents' home, and required about one and one-half hours to complete. A ten dollar fee was paid to each respondent.

Windley and Scheidt (1980) used several different instruments for collecting data for their project, including the "dwelling unit" assessment instrument which will be discussed further below.

### The Dwelling Unit Assessment Instrument

This instrument measured the environmental attributes. A complete copy of the instrument can be found in the Appendix.

The six environmental attributes used for this study had a set of specific questions to be asked or tasks to be performed by the interviewer. Presented below are the attributes with specific questions and/or tasks that were used to measure them:

**Sociality.** The first of the attributes on the Dwelling Unit Assessment instrument was used to measure the extent to which the environment encouraged or discouraged social contact among people.

The interviewer noted the room in which the resident socialized most of the time, and counted the number of seats in the room. Next, the seating arrangement in that room was categorized under one of the five (5) pre-coded arrangements on the instrument (see figure below). The five arrangements were scored according to their degree of sociopetality - a higher score representing higher facilitation of sociality.



1.



2.



3.



4.



5.

**Comfort.** This attribute included the presence or absence of luminous, acoustic, thermal and anthropometric properties of a setting. The specific items measuring Comfort were divided into two sub-sections - Temperature and Lighting.

The interviewer recorded the temperature on the thermostat in the dwelling unit, and then compared it to the reading on a thermometer he was carrying, to check the accuracy of the thermostat. The next step was to measure the dry and wet bulb temperatures with a sling psychrometer, and the relative humidity was calculated. These figures were then converted to effective temperature, which was used to determine the comfort level of the space. The interviewer then checked to see the existence of an air conditioner, additional points were scored if it was central.

The lighting levels were then measured in the living room, the kitchen and the bathroom, by standing in the middle of the rooms and holding a light level meter at waist height. The light levels were recorded for each of the four compass directions. Lighting conditions were then compared to IES standards.

**Accessibility.** One of the more important attributes of the study was the ease with which an individual could traverse from point A to B in a given setting, and the degree to which more stationary objects or products could be manipulated. It was measured in three areas: Bathroom

Accessibility, General Dwelling Unit Accessibility and Entrance Accessibility.

First the bathroom used most in the dwelling unit was identified, a higher score being awarded if it was on the main floor. This bathroom was then checked for its door width, for the passage of a wheelchair, existence of lift bars next to the toilet and the bathtub or shower and other handicapped and elderly anthropometric qualities.

The General Dwelling Unit accessibility was measured by checking the residence for more than one floor level, the type of windows - fixed, double hung, sliding or crank out, with the last type scoring the highest. The inside stairs were checked for the existence of handrails on both sides.

The Entrance Accessibility was measured for both the front and the back door. The use of the front door for entering the house scored higher. The items included for this attribute were the existence of stairs or ramp. In the case of the former, the number of steps and the presence of non-skid surfaces, the type of door handles, and the presence of storm doors was recorded.

**Quality.** The aesthetic appeal of the setting was assessed by the interviewer by recording the presence of complete plumbing in bathroom, exposed electrical wiring, a leaking roof, open cracks or holes in ceilings or walls,

broken plaster or peeling paint, holes, bumps or cracks in floor, cracked or broken windows, floors that were not level, and interior walls that did not appear to be vertical. A higher score indicated higher quality. except the first one, where a "yes" scored higher.

**Privacy.** The extent to which the features of the dwelling unit allowed an individual to control unwanted visual and acoustical stimuli from others, was measured by checking for the existence of another building below or adjoining it, the ratio for the window to wall area was calculated, The presence of blinds or drapes on the windows was also checked for.

**Density.** The degree to which a space is perceived to be crowded both in absolute numbers of people, as well as the proportion of elderly in a given setting was measured by calculating the total area of the dwelling unit and recording the number of people in it.

## **Results**

This study examined the potential relationship between the characteristics of the dwelling unit and four groups of elderly people with differing profiles of well-being. The dwelling unit characteristics were the independent variables and the four well-being groups the dependent variables. Table 1 below represents the analyses for the primary



assumption in this thesis, that is, the objective characteristics of the dwelling unit will predict the classification of the elderly residents into one of the four well-being groups. Table 2 shows the analyses for the second assumption in the study, that is, the objective characteristics of the dwelling unit will predict the dwelling status of the elderly rural residents.

Table 1 shows no objective dimension of the residential environment was able to discriminate between the four well-being groups of elderly residents.

TABLE 1

General Linear Model Analysis of Variance for the Four Well-being Groups

Source	DF	Sum of Squares	Mean Square	F	PR > F	R-Square
Model	7	13.5294	1.9328	0.49	0.8187	0.3273
Error	7	27.8039	3.9720			
Corrected Total	14	41.3333			Root MSE 1.9930	

Parameter	Estimate	T For H0: Parameter=0	PR >  T	Std Error of Estimate
Intercept	5.3283	0.46	0.6605	11.6218
Sociality	0.2207	0.93	0.3851	0.2382
Quality	-0.5697	-0.91	0.3929	0.6258
Bathacc	0.2646	0.47	0.6502	0.5586
Entacc	-0.0452	-0.09	0.9343	0.5269
Density	0.0016	0.98	0.3597	0.0017
Lighting	0.0274	0.73	0.4884	0.0374
Privacy	-0.0005	-0.24	0.8142	0.0022

The environmental attributes in Table 1 are represented by the following: Sociality: Sociality; Quality: Quality; Bathacc: Bathroom Accessibility; Entacc: Entrance Accessibility; Density: Density; Lighting: Comfort; Privacy: Privacy;

The "P" value obtained for the dependent variable FGroup is 0.8187, which clearly indicates the overall insignificance of the model at  $\text{Alpha} = 0.05$ . The criteria used was that if P value was less than Alpha then the model would have been significant or in other words there would have been a statistically significant difference between the four well-being groups.

The "T" values in Table 1 for the four well-being groups for each of the environmental attributes are much higher than Alpha and indicate the insignificant differences between the groups for each attribute for  $\text{Alpha} = 0.05$ . The only significant value in the table is for the attribute Density, but it being the only one out of the eight, should not be singled out as important for this study.

Table 2 shows no objective dimension of the residential environment was able to discriminate between the Dwelling Status of the elderly residents.

TABLE 2

General Linear Model Analysis of Variance for Dwelling Status (Live alone vs. with somebody)

Source	DF	Sum of Squares	Mean Square	F	PR > F	R-Square
Model	7	2.1421	0.3060	1.47	0.3122	0.5950
Error	7	1.4579	0.2083			
Corrected Total	14	3.6000			Root MSE 0.4564	

Parameter	Estimate	T For HC: Parameter=0	PR >  T	Std Error of Estimate
Intercept	2.3342	0.88	0.4095	2.6613
Sociality	-0.0186	-0.34	0.7437	0.0546
Quality	0.0938	0.65	0.5337	0.1433
BathAcc	-0.1144	-0.89	0.4007	0.1275
EntAcc	0.0151	0.12	0.9042	0.1211
Density	-0.0011	-2.78	0.0273	0.0004
Lighting	0.0016	0.19	0.8536	0.0026
VisPrivacy	-0.0003	-0.61	0.5604	0.0005

The environmental attributes in Table 2 are represented by the following: Sociality: Sociality; Quality: Quality; Bathacc: Bathroom Accessibility; Entacc: Entrance Accessibility; Density: Density; Lighting: Comfort; VisPrivacy: Privacy;

The "P" value obtained for the dependent variable FGroup is 0.3122, which clearly indicates the overall insignificance of the model at  $\text{Alpha} = 0.05$ . The criteria used was that if P value was less than Alpha then the model would have been significant or in other words there would have been a statistically significant difference between the elderly residents who live alone and the elderly residents who live with somebody else.

The "T" values in Table 2 for the four well-being groups for each of the environmental attributes are much higher than Alpha and indicate the insignificant differences between the groups for each attribute for  $\text{Alpha} = 0.05$ . The only significant value in the table again is for the attribute Density, which is understandable as the table represents the the scores for the elderly residents based on their dwelling status, living alone vs. living with somebody, which has a direct affect on Density of the dwelling unit.

Table 3 represents the descriptive statistics for the four well-being groups of the elderly residents, viz., The Fully Engaged, The Partially Engaged, The Disengaged, and The Frail.

TABLE 3

Means, Standard Deviations and Ranges for  
Objective Characteristics by Well-being Group.

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
The Fully Engaged					
SOCIAL	23	10.74	2.24	6.00	15.00
TSTEMP	1	94.10	.	94.10	94.10
QUALITY	23	17.13	1.14	14.00	18.00
DBTHACC	23	11.96	0.82	11.00	13.00
ENTACC	23	9.30	1.99	6.00	13.00
PRIVACY	23	1.04	0.21	1.00	2.00
PERDEN	23	1003.58	479.58	370.67	2211.00
DULITE	23	131.88	15.82	100.00	166.67
VISPRIV	23	916.84	1249.51	5.00	6024.00
The Partially Engaged					
SOCIAL	24	11.04	2.07	7.00	15.00
TSTEMP	6	94.10	0.00	94.10	94.10
QUALITY	24	17.38	0.97	15.00	18.00
DBTHACC	24	11.96	1.16	10.00	14.00
ENTACC	24	10.33	1.90	7.00	14.00
PRIVACY	24	1.13	0.34	1.00	2.00
PERDEN	24	1016.68	500.36	370.33	2112.00
DULITE	24	127.78	21.23	100.00	166.67
VISPRIV	24	1079.16	1438.15	5.00	6447.86
The Disengaged					
SOCIAL	28	12.00	3.06	7.00	20.00
TSTEMP	5	94.10	0.00	94.10	94.10
QUALITY	28	17.21	1.55	13.00	18.00
DBTHACC	28	11.71	1.21	9.00	14.00
ENTACC	28	10.57	1.62	8.00	15.00
PRIVACY	28	1.07	0.26	1.00	2.00
PERDEN	28	984.10	481.45	370.67	2112.00
DULITE	28	128.57	14.95	100.00	166.67
VISPRIV	28	889.25	926.39	4.00	3244.00
The Frail					
SOCIAL	23	10.91	2.21	7.00	15.00
TSTEMP	3	94.10	0.00	94.10	94.10
QUALITY	23	17.00	1.62	13.00	18.00
DBTHACC	23	11.61	0.99	10.00	14.00
ENTACC	23	9.61	1.62	5.00	12.00
PRIVACY	23	1.00	0.00	1.00	1.00
PERDEN	23	959.17	454.02	374.00	2112.00
DULITE	23	137.68	23.15	100.00	200.00
VISPRIV	23	2300.14	4485.68	5.00	21104.00

The environmental attributes in Table 3 are represented by the following: Sociality: Sociality; Tstemp: Comfort; Quality: Quality; Dbathacc: Bathroom Accessibility; Entacc: Entrance Accessibility; Perden: Density; Dulite: Comfort; VisPriv: Privacy;

Table 3 shows very low variation amongst the scores for the environmental attributes of the dwelling units for the four well-being groups of elderly residents, except for Density, the dwelling unit light levels and visual privacy. The latter two are not normally distributed and cannot be used as effective predictors. Density is one out of the eight environmental attributes and should not be singled out as an effective predictor. Hence, in essence there is no significant difference between the scores for the dwelling unit characteristics for the four groups of older people.

Table 4 represents the descriptive statistics for the elderly residents living alone and the ones living with somebody.

TABLE 4

Means, Standard Deviations and Ranges for Dwelling Status (Live alone vs. with somebody)

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
----- Living Alone -----					
SOCIAL	42	11.05	2.47	6.00	17.00
TSTEMP	9	94.10	0.00	94.10	94.10
QUALITY	42	17.24	1.34	13.00	18.00
DBTHACC	42	11.67	0.90	10.00	13.00
ENTACC	42	9.69	1.83	6.00	14.00
PRIVACY	42	1.00	0.00	1.00	1.00
PERDEN	42	1349.96	461.96	370.33	2211.00
DULITE	42	132.54	13.75	100.00	166.67
VISPRIV	42	1100.30	1312.02	4.00	6024.00
----- Living with Somebody -----					
SOCIAL	56	11.34	2.50	7.00	20.00
TSTEMP	6	94.10	0.00	94.10	94.10
QUALITY	56	17.14	1.35	13.00	18.00
DBTHACC	56	11.91	1.16	9.00	14.00
ENTACC	56	10.21	1.82	5.00	15.00
PRIVACY	56	1.11	0.31	1.00	2.00
PERDEN	56	721.43	249.54	370.67	1212.00
DULITE	56	130.36	22.27	100.00	200.00
VISPRIV	56	1403.15	3036.71	5.00	21104.00

The environmental attributes in Table 4 are represented by the following: Sociality: Sociality; Tstem: Comfort; Quality: Quality; Dbathacc: Bathroom Accessibility; Entacc: Entrance Accessibility; Perden: Density; Dulite: Comfort; VisPriv: Privacy;



The variance in the scores in Table 4, again is significantly low, except for Density, the dwelling unit light levels and visual privacy. The scores for the dwelling unit light levels and visual privacy are again not normally distributed and cannot be used as effective predictors. Hence, these findings show that the physical environment as measured in this study was inadequate in many cases.

### III. DISCUSSION AND CONCLUSIONS

This study has shown that the objective measurements of the characteristics of the dwelling unit do not predict in a statistically significant way the classification of the rural elderly residents into the four well-being groups, viz., the fully engaged, the partially engaged, the disengaged and the frail. The hypothesis for the study was also not supported for the prediction of the Dwelling Status (live alone vs. with somebody) of the elderly residents based on the same objective measurements.

Several reasons may account for the lack of significant differences:

1. Objective physical environment as defined in this thesis is not important in discriminating between groups of elderly people with different profiles of well-being.

The objective physical environment, by itself, may not be enough in establishing differences between groups of elderly people with different profiles of well-being. Having adjusted to these physical features over time, they are likely to have become less salient to well-being for these residents than more direct factors such as the psychosocial features or their neighborhood or communities. The low variance in Table 3 for most of the environmental attributes for the four well-being groups lends support to the above.

For example, the Istemp score of 94.10, as a component of Comfort, for all the four well-being groups has no variation at all. The scores for Quality, Bathroom Accessibility, and Privacy for all the four well-being groups are not normally distributed, for example, for the fully engaged group the minimum value for Quality is 14.0, the maximum value is 18.0, and the mean is 17.13 which clearly shows the distribution to be skewed. The same is true for the scores for Dwelling Unit light levels and Visual Privacy. Attributes with low variation and the ones that are not normally distributed cannot be used as effective predictors. The same is also true for the scores on environmental attributes for elderly people living alone versus the ones living with somebody, in Table 4. These findings show that the physical environment as measured in this study, in most cases is inadequate.

## 2. The instruments to assess dwelling unit characteristics may need further development.

The specific items used to measure each of the environmental attributes of the Dwelling Unit varied in number, e.g., there were fourteen items comprising the measurement of the attribute Accessibility but only two for Density. The number of items for comprising each of the attribute should be similar. This author is not suggesting a reduction in the items for Accessibility but the development and increase in

the number of items for the other attributes. The introduction of this parity would increase content validity for the instruments and as a result increase its reliability.

3. The four well-being groups may not be reflective of the true differences in our elderly sample.

The second reason may be due to the difference in level of measurements between physical environment and well-being. Well-being as stated earlier, is a multidimensional construct and the conceptualization and understanding of the term has moved from subjective measurement to present day scientific objective measurement. Campbell, Converse and Rodgers (1976), who have provided the most comprehensive study of well-being to date, defined it in terms other than a purely mental health construct. Components of well-being included jobs, marriage, health, housing and friendship. The four well-being groups in this study were categorized based on the elderly residents scoring a high or a low on the three orthogonal dimensions, viz., Mental and Physical Health, Contact with Others, and Activity Participation. Combining these three dimensions together, may have homogenized the four groups to a great extent, thus creating a situation where none of the three dimensions can be examined separately. Future research may produce significant differences when these three dimensions are allowed to act independently.

4. The number of subjects in each of the four well-being groups may have been too small.

Another reason for not finding any statistically significant difference between the four well-being groups may have been due to the small sample size. Even though the total number of elderly residents interviewed was 100 there were only 25 in each group, thus sampling error works to our disadvantage. The same study using a larger sample, in combination with the further development of the instrument may yield a different result.

A future study could be to examine the effects of the objective assessment of the characteristics of the dwelling units of the urban elderly, especially because the rural elderly seem more likely to have sub-standard housing compared to their urban counterparts (U.S. Census Bureau;1972; Eastman;1980). If significant results are not found among the urban elderly, it could be deduced that the objective characteristics of urban dwellings are equally non predictive of well-being. Secondly, it could also be deduced that sub-standard housing has no effect on well-being.

The elderly residents interviewed for this study lived in single family dwellings, hence, there was no variability between the dwelling units. A future study including elderly people residing in different kinds of dwellings, viz.,

apartments, and trailer homes, may lead to significant findings.

Since the elderly's primary locus of life space is within the residential setting (Pastalan, Carson, 1970), they are subject to the influences of environmental factors more than perhaps any other population group. This study, therefore, was an attempt to establish and identify a relationship between the elderly residents and the characteristics of their dwelling units. This study has shown that the characteristics of the dwelling unit do not account for differences between well-being groups. The findings of this study should serve as warning to architects, planners, environmental managers and other people providing services to an elderly clientele that environmental intervention may not always affect the well-being of the rural elderly. However, future research, taking into account the suggestions above, may show otherwise.

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## APPENDIX

### Dwelling Unit Assessment Instrument

Schedule J (Alpha & Beta)  
Dwelling Unit Assessment

SUBJECT ID	<input type="text"/>	DATE	<input type="text"/>
INTERVIEWER ID	<input type="text"/>	TIME BEGIN	<input type="text"/>
		TIME END	<input type="text"/>

=====

We are interested in the dwelling units of older people living in small towns. As you know, where older people live is very important to their happiness. I would like to ask you some questions about your dwelling unit and later ask if you would show me around your house a little bit.

=====

Sociality

1. In which room do you socialize with other people most of the time?.....  
(name of room)
2. Count the number of seats in (ROOM DESIGNATED IN Q. 1)(Consider a regular sized sofa to have 3 seats).....
3. Which of the following arrangements best describes the seating arrangement in (ROOM DESIGNATED IN Q. 1).....



1.



2.



3.



4.



5.

Comfort

Temperature

4. May I look at the reading on your thermostat? (RECORD TEMPERATURE)..... ☐
5. EXPLAIN THAT YOU HAVE A THERMOMETER AND WOULD LIKE TO COMPARE YOUR MEASUREMENT WITH THAT OF THE THERMOSTAT. IF NECESSARY, EXPLAIN THERMOMETER TO S. WITH YOUR SLING PSYCHROMETER MEASURE THE DRY AND WET BULB TEMPERATURES AT THE APPROXIMATE CENTER OF THE DWELLING UNIT (MAIN LIVING FLOOR)
- a. Dry bulb Temperature.....
- b. Wet bulb Temperature.....
- c. Relative Humidity .....
6. Does your (house/apartment) have an air conditioner?..... ☐ yes ☐ no
7. Is air conditioner: ☐ window (number) ☐ central ☐ other (do not count fans)

Lighting

8. I would now like to measure the light level in your living room, kitchen & bathroom (SHOW S LIGHT LEVEL METER IF NECESSARY)  
WITH YOUR LIGHT LEVEL METER HELD AT WAIST HEIGHT RECORD A READING FOR EACH OF FOUR DIRECTIONS WHILE STANDING AT THE APPROXIMATE CENTER OF:  
(LIGHTING CONDITIONS SHOULD BE AS THEY USUALLY ARE DURING THE DAY)

a. Living Room:

North.....

South.....

East.....

West.....

b. Kitchen:

North.....

South.....

East.....

West.....

c. Bathroom:

North.....

South.....

East.....

West.....

Bathroom Accessibility

9. DESCRIBE BATHROOM ACCORDING TO THE FOLLOWING:

- a. How many bathrooms are in dwelling unit?..... \_\_\_\_\_
- b. Is the bathroom you use most of the time on the main floor? ☐ yes ☐ no  
NOTE: FOLLOWING QUESTIONS APPLY ONLY TO BATHROOM USED MOST OF THE TIME BY S
- c. Is bathroom door wide enough for wheelchair?..... ☐ yes ☐ no
- d. Are there handrails or lift bars next to toilet?..... ☐ yes ☐ no
- e. Are there handrails or lift bars next to tub or shower?..... ☐ yes ☐ no
- f. Is lower edge of bathroom mirror higher than 40 inches from floor?..... ☐ yes ☐ no
- g. Is there turning radius for wheelchair (5 ft. by 5 ft.)..... ☐ yes ☐ no
- h. Is top of toilet seat less than 17 inches from floor?..... ☐ yes ☐ no
- i. Is there any change in floor level in bathroom?..... ☐ yes ☐ no  
(e.g., a step up to toilet or tub)
- j. Is height of tub greater than 14 inches above floor?.... ☐ yes ☐ no ☐ NA
- k. Are knobs on bathroom fixtures lever type?..... ☐ yes ☐ no

General Dwelling Unit Accessibility

10.

- a. Is the dwelling unit on more than one level  
(COUNT BASEMENT BUT NOT CELLAR)?..... ☐ yes ☐ no
- b. Are most of the windows in dwelling unit:
- |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| fixed                    | double<br>hung           | sliding                  | crank out                | other                    |
- c. Do inside stairs have handrails on both sides?..... ☐ yes ☐ no ☐ NA

### Entrance Accessibility

#### 11. DESCRIBE CONDITIONS AROUND ENTRY DOORS TO DWELLING UNIT (MUCH OF THIS CAN BE OBTAINED BEFORE ENTERING DWELLING UNIT)

	Front Door		Back Door	
a. When you enter your house, which door do you use most of the time (SHOW ON SKETCH)?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Number of steps from ground level to main floor.....	_____		_____	
c. Does entry have a storm door?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> yes	<input type="checkbox"/> no
d. Is entry protected from weather (e.g., overhang or recessed)?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> yes	<input type="checkbox"/> no
e. Are there handrails on both sides of stairs?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> yes	<input type="checkbox"/> no
f. Are there nonskid surfaces on steps?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> yes	<input type="checkbox"/> no
g. Are there lever-type door handles on outside doors?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> yes	<input type="checkbox"/> no
h. Is there a ramp from ground level to main floor level?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> yes	<input type="checkbox"/> no

### Quality

#### ASK IF YOU CAN WALK AROUND AND LOOK AT THE HOUSE AND RECORD:

12. Does dwelling unit have:

a. complete plumbing in bathroom (TOILET, SINK, TUB OR SHOWER)?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no
b. exposed electrical wiring (WITHOUT CONDUIT).....	<input type="checkbox"/> yes	<input type="checkbox"/> no
c. a leaking roof (WATCH FOR CONTAINERS TO CATCH WATER OR FOR STAINS ON FLOOR, WALLS OR CEILING)?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no
d. open cracks or holes in ceilings or walls?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no
e. broken plaster or peeling paint?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no
f. holes, bumps or cracks in floor?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no
g. cracked or broken windows?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no
h. floors that are not level?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no
i. interior walls that do not appear to be vertical?.....	<input type="checkbox"/> yes	<input type="checkbox"/> no

Privacy

13. Is S dwelling unit above the first floor of any building?..... ☐ yes ☐ no
14. Is S dwelling unit immediately adjoined by any other structure or dwelling unit on any side?..... ☐ yes ☐ no

CALCULATE THE FOLLOWING FOR:

15. Living room
- a. Total exterior wall area including all windows and doors.... \_\_\_\_\_
- b. Total window and door area in these exterior walls..... \_\_\_\_\_
- c. Do most windows have blinds or drapes?..... ☐ yes ☐ no
16. Does bathroom have windows?..... ☐ yes ☐ no
17. Were you disturbed at any time while in dwelling unit by noise outside of dwelling unit?..... ☐ yes ☐ no

Density

IF S LIVES IN APARTMENT OR RENTS AN EXCLUSIVE PART OF DWELLING UNIT TO ANOTHER, CALCULATE THE FOLLOWING FOR ONLY SPACE OCCUPIED BY S.

18. What is the total area in square feet for dwelling unit?..... \_\_\_\_\_
19. How many people are in dwelling unit?..... \_\_\_\_\_

Q.22. Prob. Serious

Q.20. Difficulty

Q.21. How Handled

(name of room)	Serious	Moderate	Mild	No	NA, DK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(name of room)	Serious	Moderate	Mild	No	NA, DK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(name of room)	Serious	Moderate	Mild	No	NA, DK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Beta Assessment

20. Will you show me anything in your (name of room) that makes it difficult for you to live in your home on a daily basis.
21. How do you handle that/desl with that?
22. How serious of s problem is it for you to do that?  
a serious problem or difficulty, a moderate problem or difficulty, a mild problem or difficulty, or no problem or difficulty?

Q.22. Prob. Serious

Q.20. Difficulty

Q.21. How Handled

		Serious	Moderate	Mild	No	NA,DK
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		Serious	Moderate	Mild	No	NA,DK
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		Serious	Moderate	Mild	No	NA,DK
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Exterior Quality

I would like to draw a rough outline of your house and measure its outside dimensions so that I can calculate the area. May I go outside for a minute? I will come back to say good bye. (draw sketch of house)

24. Does exterior of dwelling unit have:

- |  |                              |                             |
|--|------------------------------|-----------------------------|
| a. Cracks in walls or foundation.....  | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| b. Areas needing paint or exterior wall finish?.....                                     | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| c. Exterior walls that do not appear to be vertical?....                                 | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| d. Exterior structural elements (e.g., columns or beams) that are out of alignment?..... | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| e. Broken or deteriorated elements (e.g., window shutters, chimneys)?.....               | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| f. A yard that is unkempt? (e.g., long grass, junk stored in yard).....                  | <input type="checkbox"/> yes | <input type="checkbox"/> no |

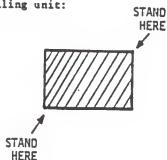
25. Compared to the dwelling units on either side, would you say S dwelling is:

☐  
more kept up

☐  
about the same

☐  
less kept up

26. Take pictures of dwelling unit:



DWELLING UNIT ENVIRONMENT AND THE WELL-BEING OF THE RURAL  
ELDERLY

by

MILLEND K. GUPTA

B. Arch., Maulana Azad College of Technology,  
Bhopal, India, 1980

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF ARCHITECTURE

Department of Architecture

KANSAS STATE UNIVERSITY  
Manhattan, Kansas  
1988

## ABSTRACT

Gerontological research has grown during the past several years and this growth can be attributed to a rapidly increasing elderly population and a long term concern in our society for their general well-being. Research in several aspects of well-being and environmental factors has identified architectural and ecological features of the environment that are of importance to the elderly.

The purpose of this study was to examine the impact of six attributes of the residential environment on four different groups of people, over 65 years of age, showing different profiles of well-being, living in 18 small Kansas rural communities under 2,500 in population. Towns were selected for the study based on their population and County Index of Ruralness values.

This study is a component of a larger project by Windley and Scheidt (1980) which examined the effects of physical and psychosocial attributes of small towns on the well-being of town residents. An overview of the larger project is included, explaining the context and the anticipated outcomes.

Analyses indicated that there was no statistically significant difference between the four well-being groups of elderly people based on the objective assessment of the

characteristics of their dwelling units. Several reasons may account for the lack of significance, including the lack of construct validity for both characteristics of environments and the group well-being typology. Other possible explanation may be in the variability of the number of items in the research instruments and the small sample sizes for the four well-being groups. Suggestions are made for methodological improvements and also for future research.